FORM PTO-1390 (REV 10-94)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE **TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371**	DOCKET #: 4925-159PUS **10/018502**
					U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

INTERNATIONAL APPLICATION NO **PCT/FI99/00384**	INTERNATIONAL FILING DATE **10 May 1999**	PRIORITY DATE CLAIMED **None**

TITLE OF INVENTION
Method and System for Determining of Operating Models of Users of a Telecommunication System

APPLICANT(S) FOR DO/EO/US
Kimmo NARKILAHTI; Hannu PAHKALA; Petteri PUTKIRANTA

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [x] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371
3. [x] This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. [x] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. [x] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
    a. [x] is transmitted herewith (required only if not transmitted by the International Bureau).
    b. [x] has been transmitted by the International Bureau.
    c. [] is not required, as the application was filed in the United States Receiving Office (RO/US)
6. [] A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. [x] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
    a. [x] are transmitted herewith (required only if not transmitted by the International Bureau). (See Reply to Written Opinion)
    b. [] have been transmitted by the International Bureau.
    c. [] have not been made; however, the time limit for making such amendments has NOT expired.
    d. [] have not been made and will not be made.
8. [] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. [x] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). **Unexecuted**
10. [] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. Below concern other document(s) or information included:
11. [x] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. [] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [x] A **FIRST** preliminary amendment.
    [] A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. [] A substitute specification.
15. [] A change of power of attorney and/or address letter.
16. [x] Other items or information *(specify)*: PCT Publication Sheet, Int'l Preliminary Examination Report, Written Opinion, Reply to Written Opinion, Int'l Search Report, PCT Request, PCT Demand, Notice Informing the Applicant of the Communication of the International Application to the Designated Offices, and Notification of the Recording of a Change

U.S. APPLICATION NO (If known, see 37 C F R 1 5)	INTERNATIONAL APPLICATION NO	ATTORNEY'S DOCKET NUMBER
10/018502	**PCT/FI99/00384**	**4925-159PUS**

17.[x]The following fees are submitted:

Basic National Fee (37 CFR 1.492(a)(1)-(5)):
Search Report has been prepared by the EPO or JPO $890.00
International preliminary examination fee paid to USPTO (37 CFR 1.482)..................$710.00
No international preliminary examination fee paid to USPTO (37 CFR 1.482)
but international search fee paid to USPTO (37 CFR 1.445(a)(2))....................................$740.00
Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO $1040.00
International preliminary examination fee paid to USPTO (37 CFR 1.482)
and all claims satisfied provisions of PCT Article 33(2)-(4) $100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =	$	890

Surcharge of **$130.00** for furnishing the oath or declaration later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$	

Claims	Number Filed	Number Extra	Rate		
Total Claims	18 - 20 =	0	x **$18.00**	$	
Independent Claims	2 - 3 =	0	x **$84.00**	$	
Multiple dependent claim(s) (if applicable)			+ **$280.00**	$	

TOTAL OF ABOVE CALCULATIONS =	$	890
Reduction of ½ for filing by small entity, if applicable.	$	
SUBTOTAL =	$	890
Processing fee of **$130.00** for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +	$	
TOTAL NATIONAL FEE =	$	890
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by the appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +	$	
TOTAL FEES ENCLOSED		$890
Amount to be refunded:		$
charged:		$

a. [x] One check in the amount of $ 890 to cover the above fee is enclosed.
b. [] Please charge my Deposit Account No. 03-2412 in the amount of $____ to cover the above fees. A duplicate copy of this sheet is enclosed.
c. [x] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 03-2412. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:
Michael C. Stuart
Cohen, Pontani, Lieberman & Pavane
551 Fifth Avenue, Suite 1210
New York, New York 10176

Michael C. Stuart
Registration Number: 35,698 October 30, 2001
Tel: (212) 687-2770

Form PTO-1390 (REV 10-94)   page 2 of 2

Method and system for determining of operating models of users of a **telecommunication system**

The invention relates to a method according to the preamble of Claim 1 for determining the behaviour patterns of users of a telecommunication system.

The invention also relates to a system according to the preamble of Claim 13 for determining the behaviour patterns of users.

From the point of view of a beginning telecommunication system operator, such as a mobile phone operator, the focus is on increasing the coverage and capacity of the system. When a sufficient level has been reached in these areas, the operators begin to pay more attention to improving the quality of service. An important factor in quality improvement is to optimize the properties of the system for the needs of the users. In order to achieve this, the operator must get information both about the performance of its system and the behaviour of its users.

In Figure 1, the operation of the mobile communication system 10 is shown as a simplified diagram. The system 10 in Figure 1 comprises a base station 12, a mobile services switching centre (MSC) 13, a network management system (NMS) 14, a customer register 15 and a statistics unit 16. When the mobile station 11 is used, a connection is established between the mobile station 11 and the base station 12. Via the base station 12, the connection is transmitted to the MSC 13, which establishes a connection between the mobile station 11 and the intended destination. Information about the connection, the type of service offered and its duration is transmitted from the MSC to the customer register 15, in which the information is saved for invoicing.

By means of the network management system 14, the operation of both the MSC 13 and the whole mobile communication system 10 is monitored and also managed, when required. Information collected by the network management system 14 can be saved in the statistics unit 16 for statistical reference.

Figure 2 is a flow chart of a prior art method 20, in which statistical material is collected for the needs of the system operator. The method 20 is based on examination of the statistical material about the use of a mobile communication system 10 received from the statistics unit 16. In a method like this it can be examined, for example, how large a proportion of the attempts to establish a

2

connection succeeded in the area of each base station, or what the average duration of the connections in the system is.

In the first step 21 of the method 20, the parameter to be examined is defined. The information is collected in the second step 22. In the third step 23 of the method, the value of the parameter is added to the statistics, whereafter the process returns to step 22 for collecting more information, when needed. When the statistical data collected are regarded as sufficient, statistical analysis is carried out in step 24.

By carrying out statistical analyses, the method 20 described above can be used to calculate parameters essential for the mobile communication system from the statistical material obtained from the system, which parameters can then be used for optimizing the system, for example. However, the statistical quantities received from the use of the mobile communication system do not identify the users, but the statistics are compiled on the basis of measurable system parameters, and these parameters are not individualized by users.

Figure 3 shows another prior art method, by which statistical material is collected for the use of the system operator. The method is built on the method 20 depicted above in Figure 2, complemented with the method 30 based on a customer survey. The purpose of the customer survey is to find individual differences between users and to group the users according to their patterns of behaviour.

The parameter to be examined in the survey is defined in the first step 31, after which the actual customer survey 32 and compilation of statistics 33 is carried out. The statistical material received from the customer survey can be combined with the statistical material received from the mobile communication system by the first method 20, after which statistical analysis 24 is carried out on the combined material.

The prior art methods entail the problem that there is not a clear connection between the users and the parameters of the mobile communication system. Statistically it is possible to make comparisons between the statistical materials received with different methods and to try to connect the values of certain parameters measured from the system to certain classes of behaviour patterns of users defined on the basis of the customer survey. However, there is no certain connection between the classes of behaviour patterns and the parameters calculated from the operation of the system, because a certain user or class of behaviour pattern cannot be unambiguously combined with the quantities measured from the system.

3

Furthermore, the solution based on a prior art customer survey with questionnaires entails the problem of the reliability of questionnaire surveys in general. In practice, the person who carries out the survey does not have full certainty of to what extent the material collected with a customer survey really reflects the real situation and

5   how much the personal opinions or assumptions of the users have influenced the results of the survey. For this reason, the best application of questionnaire surveys is in charting the opinions and expectations of users.

It is the objective of this invention to provide a new method for charting the users' patterns of behaviour and a telecommunication system by means of which the

10   problems of the prior art described above can be eliminated. The method according to the invention is characterized in what is set forth in the characterizing part of Claim 1. The system according to the invention is characterized in what is set forth in the characterizing part of Claim 13. Preferred embodiments of the invention are described in the dependent claims.

15   In the method according to the invention, at least one variable or a combination of variables of a telecommunication system, such as a mobile communication system, is defined, user-specific information corresponding to at least one variable or a combination of variables is filtered from the information collected from the telecommunication system, and the users of the telecommunication system are

20   divided into at least one class of behaviour patterns on the basis of the filtered user-specific information.

The system according to the invention comprises means for defining at least one variable or a combination of variables of a telecommunication system, filtering means for filtering user-specific information corresponding to at least one variable

25   or a combination of variables from the information received from a telecommunication system, and classification means for classifying the users of a telecommunication system on the basis of the filtered user-specific information.

In one embodiment of the method according to the invention, the user-specific information is filtered from the telecommunication system in real time.

30   In one embodiment of the method according to the invention, the user-specific information is saved for later analysis.

In one embodiment of the method according to the invention, statistical analysis is carried out on the classified information.

4

In one embodiment of the method according to the invention, the classes of behaviour patterns are defined in advance.

In one embodiment of the method according to the invention, the definitions of the classes of behaviour patterns are changed, after which the filtered information can
5   be classified again using the new classes of behaviour patterns.

In one embodiment of the method according to the invention, the at least one variable is the user's type of contract.

In one embodiment of the method according to the invention, the at least one variable is the type of system service.

10 In one embodiment of the system according to the invention, the system is designed to process the information received from the telecommunication system in real time.

In one embodiment of the system according to the invention, the system has a memory for saving the filtered user-specific information.

In one embodiment of the system according to the invention, the system has analysis
15 means for statistical analysis of the classes of behaviour patterns received from the classification means and/or for defining new classes of behaviour patterns.

In one embodiment of the system according to the invention, the system has regulating means for regulating the values of the parameters essential for the quality of service of the telecommunication system on the basis of the information received
20 from the analysis means.

The advantage of the method and system according to the invention as compared to the prior art solution is the fact that they enable connecting the behaviour patterns of users unambiguously to the quantities describing the operation of the telecommunication system, which improves the possibilities of the system operator
25 to optimize the functions of the telecommunication system to meet the real needs of the users.

The solution according to the invention also provides the advantage that the classes of behaviour patterns of users can be defined more easily and more extensively than before, because quantities describing the operation of the system can also be used in
30 the classification.

5

In the following, the invention will be described in more detail with reference to the accompanying drawings, in which

Figure 1   illustrates the principle of the mobile communication system,
Figure 2   depicts a prior art method for collecting statistical material from the
5   mobile communication system,
Figure 3   depicts another prior art method for collecting statistical material from the
            mobile communication system,
Figure 4   depicts a method according to the invention for determining the behaviour
            patterns of users of a telecommunication system, and
10   Figure 5   depicts a system according to the invention for determining the classes of
            behaviour patterns of users of a telecommunication system.

Figures 1, 2 and 3 have been dealt with above in connection with the description of the prior art.

The solution according to the invention makes use of the fact that the users of the
15   telecommunication system, the subscribers, can be identified via the customer register, for example. This enables individualizing the events of the telecommunication system or the measurements related to the events of the system. For example, when a phone call made in a mobile communication system is transferred from one base station to another by means of channel switching between
20   the base stations, besides registering the channel switching, it is also possible to register the user of the mobile phone by taking advantage of individual identifiers. By registering also an individual identifier from all the channel switches between base stations, the users can be classified into groups according to the channel switches between base stations. This provides the system operator new information
25   about the users of the system, their mobility and its requirements for the system.

Figure 4 is a flow chart about a solution based on the method according to the invention for determining the classes of the users' behaviour patterns. The first step 41 of the method is to define the parameter to be examined, such as the number of channel switches between base stations in a mobile communication system.

30   The second step 43 of the system is to filter user-specific information according to the parameter defined in the first step 41 from the information collected from the telecommunication system 42. In the second step 43, this information together with the user-specific identifier is separated from other information received from the

6

mobile communication system. If other information is collected at the same time for some other purpose, several different filterings can be carried out in step 43.

The filtering carried out in the second step 43 of the method need not be a mere separation of information from a wider flow, but it can also be used for carrying out
5   more complicated processing of information. For example, the information to be filtered can be the average number of channel switches between base stations in a certain period of time, whereby the averaging of the information in a certain period of time also takes place in the second step 43.

The filtering of information can be arranged so, for instance, that the information to
10   be filtered is real-time information received from the mobile communication system. That would make it possible to follow the behaviour of the users of the telecommunication system in real time.

Filtering the information needed from the information flow to be examined is essential for reducing the amount of information to be processed. For example, in
15   the mobile phone network being examined the information path can be a 10 Mbit/s bus, which can typically transmit several megabits of information per second. Although it is advisable to follow the whole information flow in real time, it is not sensible to save the whole amount of information, because it would require a huge amount of saving capacity. Therefore it is more sensible to start by filtering only
20   the information needed from the information flow and save only the essential information thus received.

The filtered user-specific information received in the second step 43 of the method according to the invention can be saved in step 44 for later processing or used in the third step 45 of the method for classifying the users into different classes of
25   behaviour patterns, if these classes have been defined in advance. For instance, users whose average frequency of channel switching between base stations exceeds a certain predetermined value, are classified as high-mobility users, and users whose average frequency of channel switching between base stations is below another predetermined value, are classified as low-mobility users.

30   After the classification which took place in the third step 45 of the method, statistical analysis 46 can be carried out on the classified material. On the basis of the results, the system operator can then draw conclusions 47 about the regulation of parameters essential for improving the quality of service of the system.

7

If the classes of behaviour patterns have not been defined in advance, or the statistical analysis 46 indicates that there is a need to define new classes of behaviour patterns, the new classes of behaviour patterns can be defined 48 on the basis of the statistical analysis 46 carried out on the filtered user-specific information. When the new classes of behaviour patterns have been defined, the filtered user-specific information must be classified again. For carrying out the reclassification 49, the filtered unclassified user-specific information must have been saved 44 before any earlier classification 45.

The statistical analysis 46 described above can be carried out again for the re-classified information for drawing conclusions 47 or for further specification 48 of the classes of behaviour patterns.

In the method according to the invention, the variable or a combination of variables selected for examination can be selected as appropriate for the matter being studied. At the simplest, the variable used in the classification can be the type of the subscription contract made by the user with the operator: is it a private customer or a company. In a more complicated case, for instance when the users of the mobile phone network are classified into traditional telephone users and users who also use other services of the network, such as the short message service (SMS), the type of system service, e.g. whether it is a GSM connection or an SMS connection, can be used as the basis for classification.

If desired, the information used in compiling the statistics can be collected from many sources. That would make it possible to combine different types of information in defining the classes of behaviour patterns. Good sources for collecting information are, for example, the customer register and the databases of the network management system about connections and attempted connections in the system.

Figure 5 depicts a system 50 according to the invention for determining the behaviour patterns of the users of a telecommunication system. The system 50 comprises at least means 51 for defining at least one variable or a combination of variables, filtering means 53 for filtering user-specific information corresponding to at least one variable or a combination of variables from information received from the telecommunication system, and classifying means 55 for classifying the users on the basis of the filtered user-specific information.

8

To advantage, the system 50 is designed so that it can process the information received from the telecommunication system in real time.

The defining means 51 are preferably implemented so that when desired, they can also be used to define the limits of the classes of behaviour patterns, whereby the
5   system operator can define the actual classes of the behaviour patterns to be examined.

In order to implement the preferred embodiments described above, the system 50 can also comprise at least one of the following: a memory 54 for saving the filtered user-specific information, analysis means 56 for carrying out statistical analysis, and
10   regulating means 57 for regulating the parameters of the telecommunication system according to the results received from the analysis means 56.

Depending on the saving capacity required, the memory 54 can consist of memory circuits when relatively small amounts of information are saved, or a mass storage, such as a tape station when a larger saving capacity is needed. The memory 54 is
15   preferably connected to the classification means 55, whereby the filtered user-specific information can be re-classified if desired, e.g. in accordance with the new classes of behaviour patterns defined on the basis of the analysis carried out with the analysis means.

As an example of the use of a solution according to the invention its is assumed that
20   the operator wants to focus its service on a certain customer group which uses the mobile phone frequently, and typically in business centres and at airports. In that case, the operator wants to determine the limits of such interesting areas as exactly as possible, so that the quality of service for the target group could be raised to the desired level. By means of the method described above, the areas in which the
25   intended target group uses the system can be determined in a rather simple manner.

In the first step 41, a parameter or a combination of parameters by which the target group is identified as effectively as possible is selected as the first variable to be examined. In addition, the first variable is used to define a class of behaviour patterns, which corresponds to the intended target group as closely as possible.
30   Furthermore, a variable containing location information of the mobile station, such as the location update information of the mobile station is defined as the second variable in the first step 41.

In the second step 43, only the location update information of users according to the selected first parameter is filtered from the information 42 collected from the mobile

9

communication system. After this, the filtered information is classified according to the defined second parameter in the third step 45. Thus the areas of the mobile communication network have been classified according to the location update information of the target group.

5   By carrying out statistical analysis 46 on the classified material the operator can draw conclusions 47 about the required measures for improving the quality of service of the target group. For example, the operator can decide to extend the capacity of the network in areas used by the target group most frequently, so that the members of the target group would not have to suffer from problems caused by too
10   small capacity.

The operator can use the prior art solution described above for regulating values that are essential for the quality of service, such as the QoS (Quality of Service) threshold values used for allocating resources in the GPRS system.

The solution according to the invention is not limited to the performance order used
15   in the above examples, but the steps can also be performed in a different order if desired.

Naturally, the solution according to the invention is not limited to the examples presented above, but its details can be modified without departing from the scope defined by the attached claims.

Claims

1.   A method (40) for determining the behaviour patterns of the users of a telecommunication system on the basis of information collected from the system, **characterized** in that

5   at least one variable or a combination of variables (41) of the telecommunication system is defined,

         user-specific information (43) corresponding to the defined at least one variable or a combination of variables is filtered from the information collected from the telecommunication system, and

10   the users of the telecommunication system are classified on the basis of the filtered user-specific information (45).

2.   A method (40) according to Claim 1, **characterized** in that said user-specific information is filtered from the telecommunication system in real time.

3.   A method (40) according to Claim 1, **characterized** in that after said filtering 15 (43) of information the filtered information is saved (44) for later analysis.

4.   A method (40) according to Claim 1, **characterized** in that after the classification (45), statistical analysis (46) is carried out on the classified information.

5.   A method (40) according to Claim 4, **characterized** in that parameters 20 essential for the quality of service of the telecommunication system are regulated on the basis of said statistical analysis (46).

6.   A method (40) according to Claim 4, **characterized** in that on the basis of said statistical analysis, conclusions (47) are drawn about the behaviour of a certain group of users in a telecommunication system.

25 7.   A method (40) according to Claim 1, **characterized** in that the classes of behaviour patterns used in the classification of users are defined in connection with the definition of variables (41).

8.   A method (40) according to Claim 1, **characterized** in that the definitions of the classes of behaviour patterns used in the classification of users are changed (48).

11

9.   A method (40) according to Claim 8, characterized in that said filtered unclassified information is classified into said new classes of behaviour patterns (49).

10.   A method (40) according to Claim 1, characterized in that at least one of the variables is the type of contract of the user.

11.   A method (40) according to Claim 1, characterized in that at least one of the variables is the type of system service.

12.   A method (40) according to Claim 1, characterized in that said telecommunication system is a mobile communication system (10).

13.   A system (50) for determining the users' patterns of behaviour in a telecommunication system, characterized in that said system (50) comprises at least

    means (51) for defining at least one variable or a combination of variables of the telecommunication system,

    filtering means (53) for filtering said user-specific information corresponding to at least one variable or a combination of variables from the information received from the telecommunication system, and

    classifying means (55) for classifying the users of the telecommunication system on the basis of said filtered user-specific information.

14.   A system (50) according to Claim 13, characterized in that the system is designed to process the information received from the telecommunication system in real time.

15.   A system (50) according to Claim 13, characterized in that the system has a memory (51) for saving said filtered user-specific information.

16.   A system (50) according to Claim 13, characterized in that the system has analysis means (56) for statistical analysis of the classification of the behaviour patterns of users received from the classifying means (55) and/or for defining new classes of behaviour patterns.

17.   A system (50) according to Claim 13, characterized in that the system (50) has regulating means (57) for regulating the values of parameters essential for the

12

quality of service of the telecommunication system on the basis of the information received from the analysis means (56).

18. A system (50) according to Claim 13, **characterized** in that said telecommunication system is a mobile communication system (10).

1/3

Fig. 1
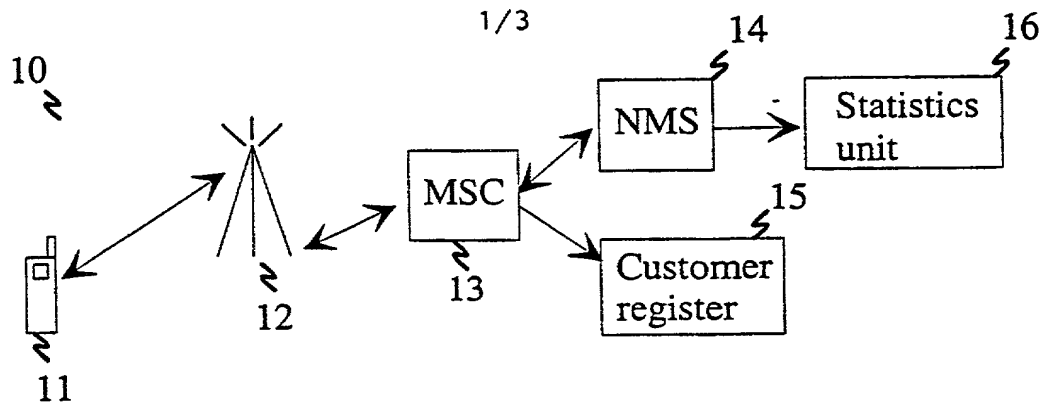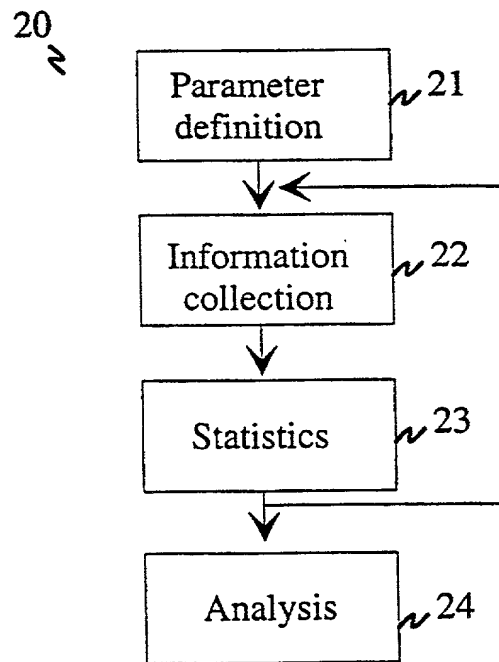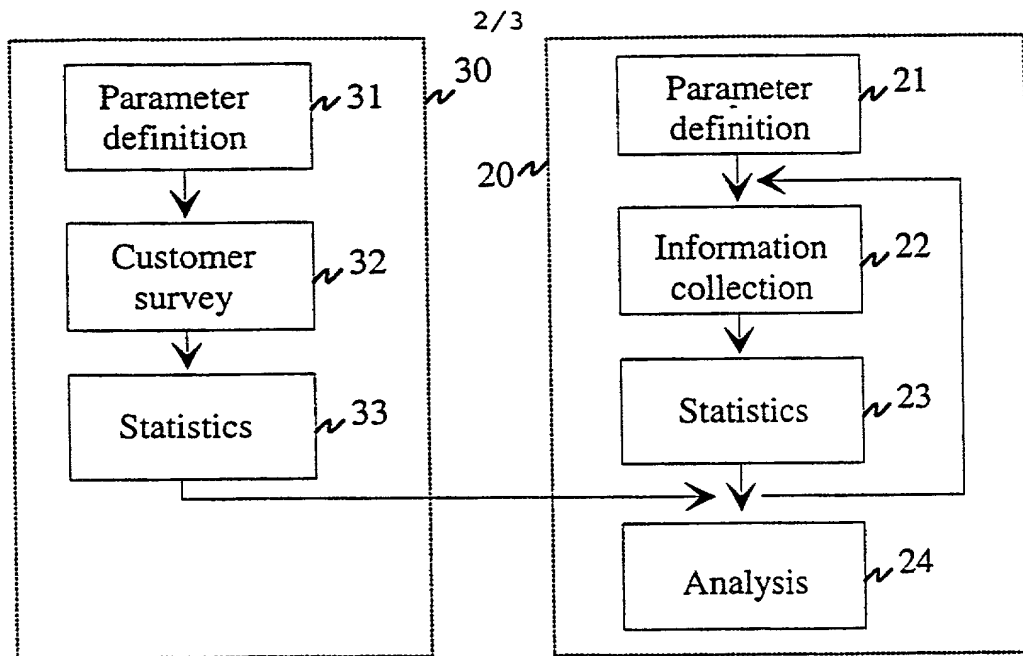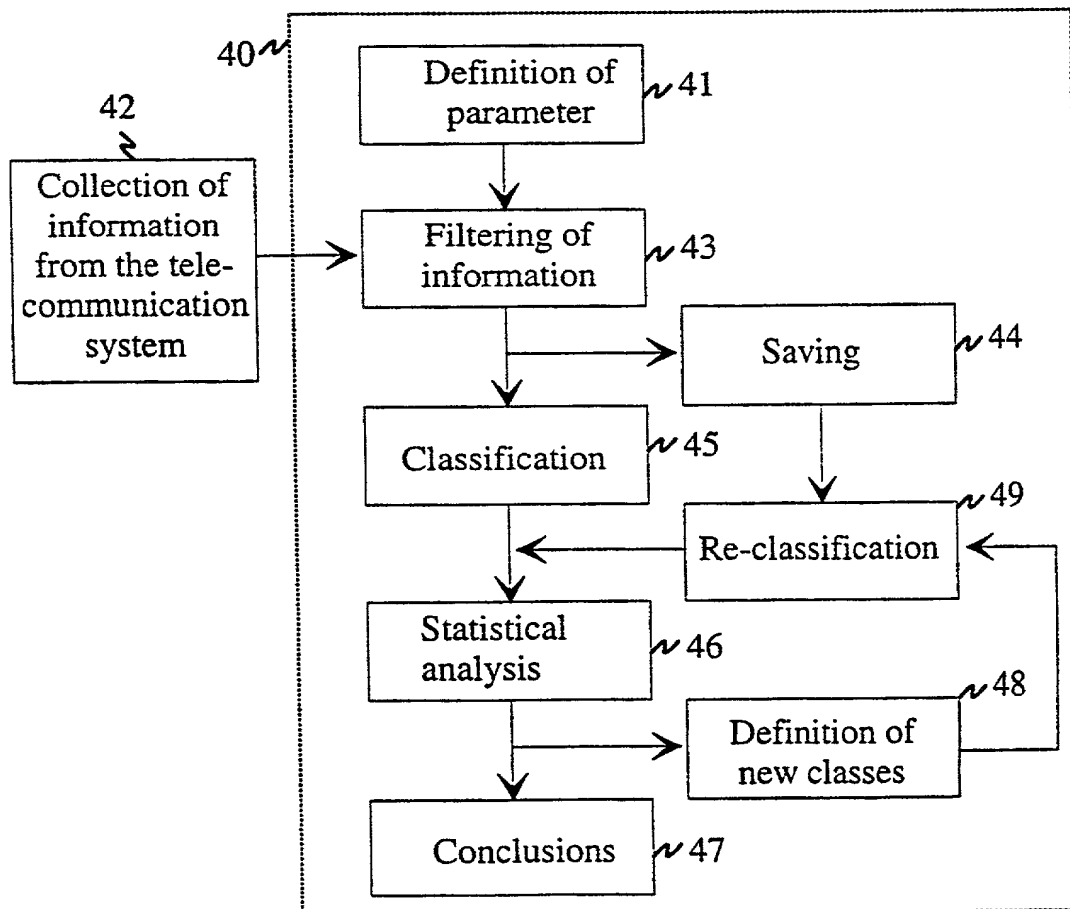

Fig. 2

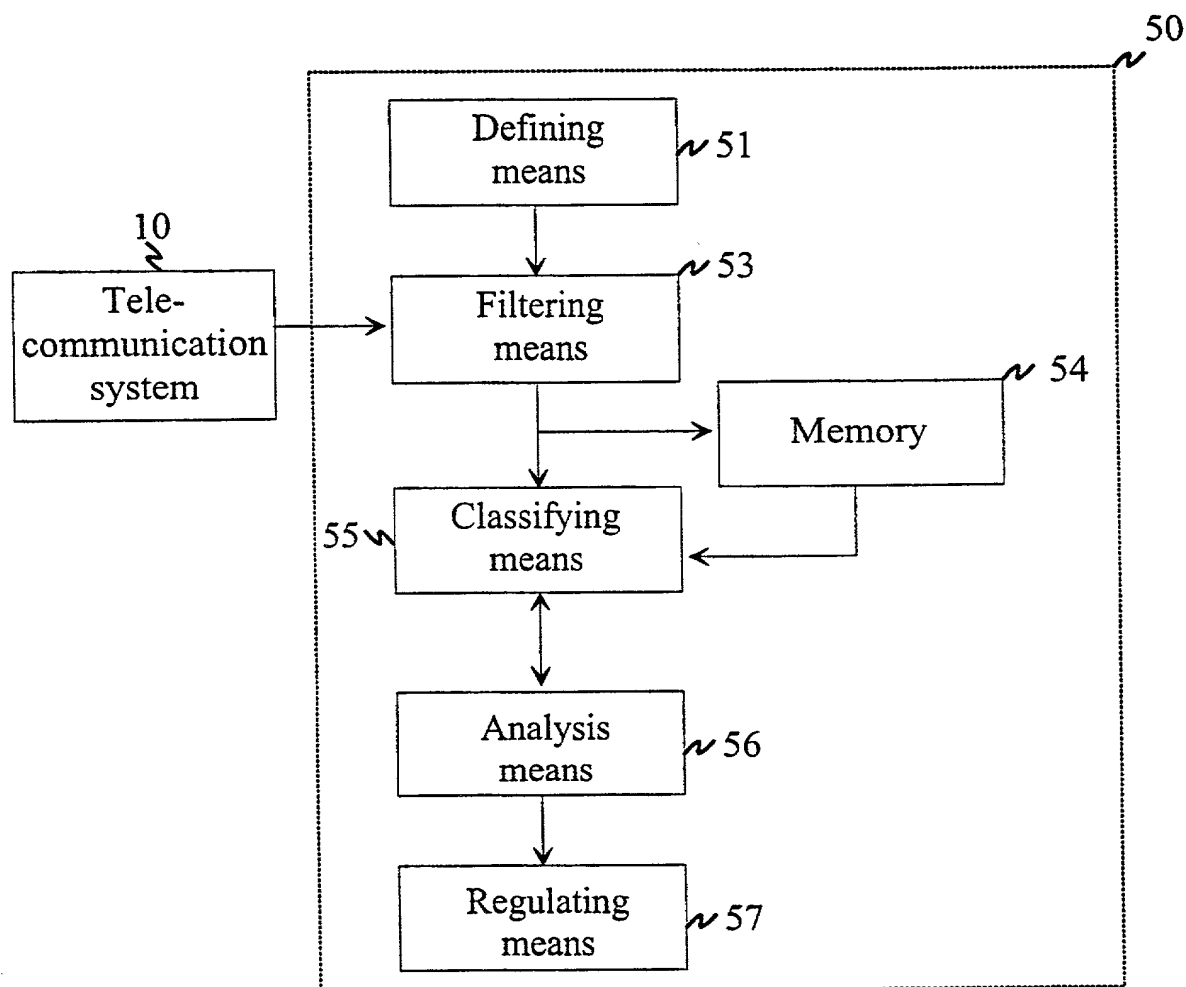**Fig. 3**

Fig. 4

Fig. 5

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY Includes Reference to PCT International Applications	Attorney's Docket No.4925-159PUS

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD AND SYSTEM FOR DETERMINING OF OPERATING MODELS OF USERS OF A TELECOMMUNICATION SYSTEM

the specification of which (check only one item below)

[] is attached hereto

[] was filed as United States application

Serial No. _

on _

and was amended

on _ (if applicable).

[x] was filed as PCT international application

Number _PCT/FI99/00384_

on _May 10, 1999_

and was amended under PCT Article 19

on _ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of the application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

PRIOR FOREIGN/PCT APPLICATIONS AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:				
Country (if PCT, indicate "PCT")	Application Number	Date of Filing (day, month, year)	Priority Claimed Under 35 U.S.C. 119	
PCT	PCT/FI99/00384	May 10, 1999	[x] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO

Combined Declaration for Patent Application and Power of Attorney (Continued) (Includes Reference to PCT International Applications)	Attorney's Docket No. **4925-159PUS**

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120:

U.S. APPLICATIONS		STATUS *(check one)*		
U.S APPLICATION NUMBER	U.S FILING DATE	PATENTED	PENDING	ABANDONED

PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED *(if any)*			
PCT/FI99/00384	May 10, 1999			X	

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (*List name and registration number*)

MYRON COHEN, Reg. No. 17,358; THOMAS C. PONTANI, Reg. No. 29,763; LANCE J. LIEBERMAN, Reg. No. 28,437; MARTIN B. PAVANE, Reg. No. 28,337; MICHAEL C. STUART, Reg. No. 35,698; KLAUS P. STOFFEL, Reg. No. 31,668; EDWARD M. WEISZ, Reg. No. 37,257; JULIA S. KIM, Reg. No. 36,567; VINCENT M. FAZZARI, Reg. No. 26,879; ALFRED W. FROEBRICH, Reg. No. 38,887; KENT H. CHENG, Reg. No. 33,849; ROGER S. THOMPSON, Reg. No. 29,594; F. BRICE FALLER, Reg. No. 29,532; YUNLING REN, Reg. No. 47,019; DAVID J. ROSENBLUM , Reg. No. 37,709; ELI WEISS, Reg. No. 17,765; TONY CHEN, Reg. No. 44,607.

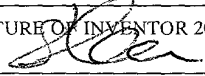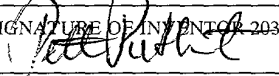| Send correspondence to:
    Michael C. Stuart
    Reg. No. 35,698
    Cohen, Pontani, Lieberman & Pavane
    551 Fifth Avenue, Suite 1210
    New York, New York 10176
	Direct Telephone calls to:
	(name and telephone number)
	    Michael C. Stuart
	    (212) 687-2770

FULL NAME OF INVENTOR	FAMILY NAME NARKILAHTI	FIRST GIVEN NAME Kimmo	SECOND GIVEN NAME
RESIDENCE, CITIZENSHIP	CITY Helsinki	STATE OR FOREIGN COUNTRY Finland	COUNTRY OF CITIZENSHIP Finland
POST OFFICE ADDRESS	POST OFFICE ADDRESS Laivanvarustajankatu 9 B 58	CITY Helsinki	STATE & ZIP CODE/COUNTRY FIN-00140 Finland
FULL NAME OF INVENTOR	FAMILY NAME PAHKALA	FIRST GIVEN NAME Hannu	SECOND GIVEN NAME
RESIDENCE, CITIZENSHIP	CITY Pirkkala	STATE OR FOREIGN COUNTRY Finland	COUNTRY OF CITIZENSHIP Finland
POST OFFICE ADDRESS	POST OFFICE ADDRESS Ratsutilantie 2 A	CITY Pirkkala	STATE & ZIP CODE/COUNTRY FIN-02610 Finland

203	FULL NAME OF INVENTOR	FAMILY NAME PUTKIRANTA	FIRST GIVEN NAME Petteri	SECOND GIVEN NAME
	RESIDENCE CITIZENSHIP	CITY Espoo	STATE OR FOREIGN COUNTRY Finland	COUNTRY OF CITIZENSHIP Finland
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Kelkkamäentie 12 A	CITY Espoo	STATE & ZIP CODE/COUNTRY FIN-02610 Finland

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE 4.12.2001	DATE 3 Jan 2002	DATE 7.1.2002